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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,025	12/02/2003	Baohua Qi	SFST.03USU1	4457

27479 7590 07/05/2005

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EXAMINER

FASTOVSKY, LEONID M

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/727,025	Applicant(s) QI ET AL.	
	Examiner Leonid M. Fastovsky	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-12,27-35 and 37-40 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-12,27-35 and 37-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagaki in view of Hsu, in view of Lee et al and further in view of Pron.

Kitagaki teaches an electrical heating element 1 comprising an electrically conductive yarns 5 and non-conductive yarns 6 (Fig. 2), and yarns 2 and 3 in the form of fabric, but does not teach a polyaniline yarn. Hsu teaches an electrically conductive polyaniline yarn (col. 11, lines 50-63). It would have been obvious to one having ordinary skill in the art to modify Kitagaki's invention to replace its yarn 5 with polyaniline yarn of Hsu in order to make a heating apparatus with high strength and consistent conductivity by Hsu's teaching (col. 1, lines 45-54). As for means for passing a voltage or current through the heating element, one of the ordinary skill in the art would have known to connect this electrical sheet to a power source in order to provide heat as a common knowledge.

Further, Kitagaki in view of Hsu teaches substantially the claimed invention including a doped polyaniline having a chosen diameter cited by Hsu (col. 11, lines 50-62), but does not teach ranges of conductivity. Lee teaches an electrically conductive polymer with conductivity in excess of 103S/cm (Abstract).

It would have been obvious to one having ordinary skill in the art to modify the invention of Kitagaki in view of Hsu to include ranges of conductivity as taught by Lee in order to improve conductivity of the polyaniline heater.

Further, Kitagaki in view of Hsu and Lee does not teach a deterioration of conductivity of polyaniline at certain temperatures. Pron teaches variations of reduced conductivity of polyaniline at different temperatures (page 6, [100] [101]). It would have been obvious to one having ordinary skill in the art to modify the invention of Kitagaki in view of Hsu and Lee as taught by Pron in order to maintain conductivity of the heating apparatus when conductivity of the conductive polyaniline is reduced.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagaki in view of Hsu and Lee and further in view of Barry, Jr.

Kitagaki in view of Hsu and Lee teaches substantially the claimed invention, but does not teach redoping of polyaniline fiber. Barry teaches a method of enhancing polyaniline conductivity including doping and redoping (col. Col. 5-8). It would have been obvious to one having ordinary skill in the art to modify the invention of Kitagaki in view of Hsu and Lee to include redoping of polyaniline fiber as taught by Barry in order to positively effect electrical and mechanical properties of the heating apparatus.

4. Claims 12, 27-29, 31-33, 35 and 37- 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagaki in view of Hsu and Lee et al and further in view of Fukushima.

Kitagaki in view of Hsu and Lee teaches substantially the claimed invention including a doped polyaniline having a chosen diameter (col. 11, lines 50-62), but does not teach

Kitagaki in view of Hsu and Lee teaches substantially the claimed invention including a doped polyaniline having a chosen diameter (col. 11, lines 50-62), but does not teach peak stress and as-spun module. Fukushima teaches a hybrid material comprising of polyaniline (col. 19, line 63), and having a peak stress of 110 MPa and as-spun modulus of 2.3 (Col. 25, Table 2). It would have been obvious to one having ordinary skill in the art to modify the invention of Kitagaki in view of Hsu to include ranges of conductivity, peak stress and as-spun module as taught by Lee and Fukushima in order to improve durability of the polyaniline heater.

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagaki, Hsu, Lee and Fukusawa and further in view of Eiffler.

Kitagaki in view of Hsu, Lee and Fukusawa discloses substantially the claimed invention, but does not disclose a range of the molecular weight. Eiffler discloses a polymer with a molecular weight of more than 200,000 g/mol (col. 9, lines 26-30). It would have been obvious to one having ordinary skill in the art to modify the invention of Kitagaki in view of Hsu, Lee and Fukusawa to include a molecular weight of the polymer in polyaniline fiber as taught by Eiffler as a generally used average weight of the polyaniline fiber in order to improve durability of the conductive fiber.

6. Claims 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagaki in view of Hsu, Lee and Fukushima and further in view of Barry.

Kitagaki in view of Hsu, Lee and Fukushima teaches substantially the claimed invention, but does not teach redoping of polyaniline fiber. Barry teaches a method of enhancing polyaniline conductivity including doping and redoping (col. Col. 5-8). It would have

been obvious to one having ordinary skill in the art to modify the invention of Kitagaki in view of Hsu, Lee and Fukushima to include redoping of polyaniline fiber as taught by Barry in order to positively effect electrical and mechanical properties of the heating apparatus.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Response to Arguments

8. Applicant's arguments with respect to claims 1-2, 5-12, 27-35 and 37-40 have been considered but are moot in view of the new ground(s) of rejection.

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As to means for passing a voltage or current through the heating element, one of ordinary skill in the art would have known to connect the electrical sheet to a power source in order to provide heat. By the way, Applicant has not provided any specific details for these means in his application, only a general description of available power sources.

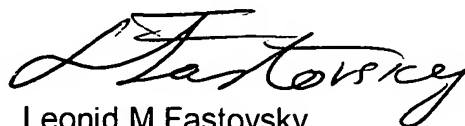
As for relevance of the references, applicant admits that Lee teaches a conductive polymer having an electrical conductivity of more than 100 S/m, thus admitting that the Lee reference is valid and therefore is properly applied with other references in the Office Action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid M Fastovsky whose telephone number is 571-272-4778. The examiner can normally be reached on M-Th. 8.00 am -6.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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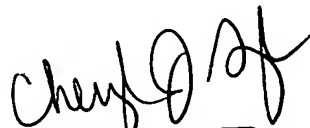
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Leonid M Fastovsky
Examiner
Art Unit 3742

lmf

6/27/06



CHERYL TYLER
SUPERVISORY PATENT EXAMINER